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(51) INT CL<sup>5</sup>

A63B 53/04

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A6D D23B

(56) Documents cited

GB 2238251 A

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US 4540178 A

US 4355808 A

US 4027885 A

(58) Field of search

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INT CL<sup>5</sup> A63B

(54) Iron clubhead structure for golf club

(57) An iron clubhead structure comprises a clubface part (A) having a given shape and a predetermined loft angle and a rear part (B) integrally connected to said clubface part. Clubface parts of clubheads of the same identification number have the same shape and size, and the same loft angle whereas rear parts are of different shapes according to the desired characteristics of the club, such as position of centre of gravity. A variety of iron clubheads of same clubface parts and different rear parts can thus be made without the expense of test molds. Parts A and B are connected by welding or soldering.

FIG. 3

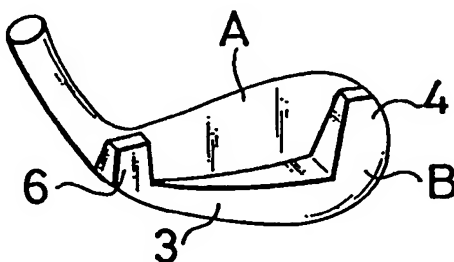
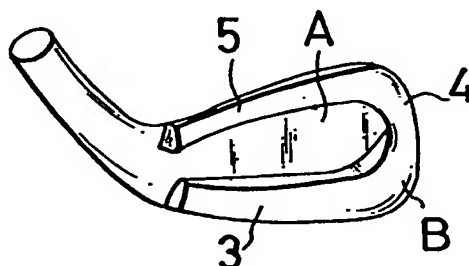


FIG. 4



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FIG. 1

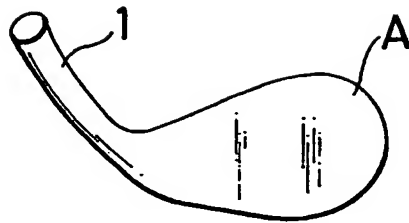


FIG. 2

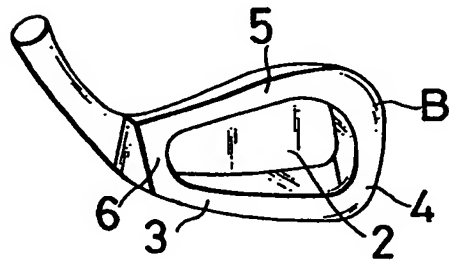


FIG. 3

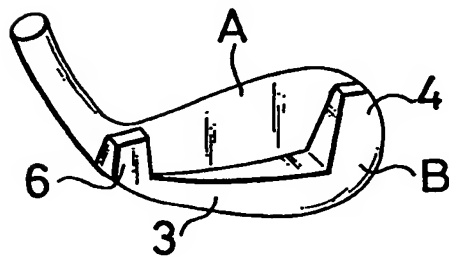


FIG. 4

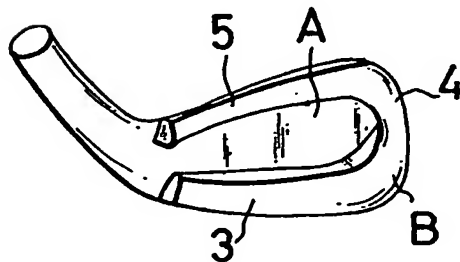


FIG. 5

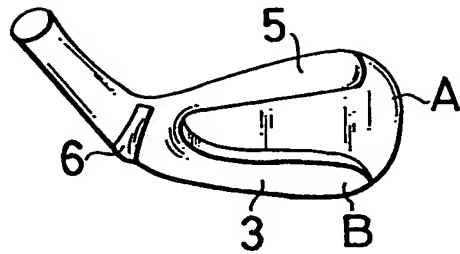


FIG. 6

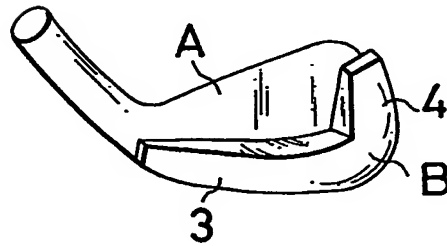


FIG. 7

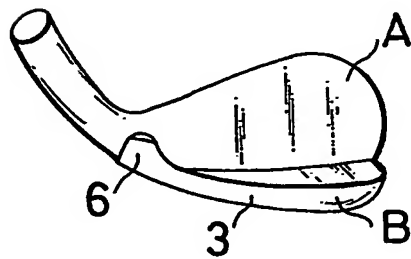
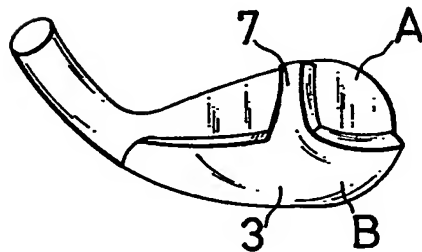


FIG. 8



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Improved iron clubhead structure

The present invention relates to an improvement in or relating to an iron clubhead.

5 As is well known, iron clubheads vary in shape even in a same identification number of iron club to meet particular purposes or individual tastes regardless of what types of iron clubs they may be, long, middle or short iron.

10 In designing and developing iron clubheads a test mold is made up for each different new-designed iron clubhead to make a test-molding, and as a matter of fact this costs much.

In view of the above one object of the present invention is to provide an iron clubhead structure which requires no test molds, permitting the designing of all possible different club-  
15 head shapes, thus substantially reducing the cost involved for providing test objects.

To attain this object an iron clubhead according to the present invention comprises a clubface part having a given shape and a predetermined loft angle and a rear part integrally connected to said clubface part. The rear part may take any  
20 desired shape to meet a particular demand in designing.

According to one aspect of the present invention said rear part may comprise upper, lower, distal and proximal pieces integrally connected together, leaving a center hollow space  
25 enclosed thereby.

According to another aspect of the present invention said rear part may comprise lower, distal and proximal pieces integrally connected together.

According to still another aspect of the present invention  
30 said rear part may comprise upper, lower and distal pieces integrally connected together.

According to still another aspect of the present invention said rear part may comprise upper, lower and proximal pieces integrally connected together.

35 According to yet still another aspect of the present invention said rear part may comprise lower and distal pieces integrally connected together.

According to yet still another aspect of the present invention said rear part may comprise lower and proximal pieces integrally connected together.

5 According to yet still another aspect of the present invention said rear part may comprise lower and rising pieces integrally connected together, said rising piece being positioned at a given place other than either end of said lower piece.

10 No matter what shapes the rear parts of new-designed iron clubheads may take, the clubface parts of the iron clubheads may be used in common, thus making it unnecessary to make test molds. Thus, the cost involved for making up test-moldings is substantially reduced.

15 Other objects and advantages of the present invention will be understood from a variety of iron clubheads according to preferred embodiments of the present invention, which are shown in accompanying drawings.

Fig. 1 is a rear side perspective view of the clubface part of an iron clubhead according to a first preferred embodiment of the present invention;

20 Fig. 2 is a rear side perspective view of an iron clubhead according to the first preferred embodiment;

Fig. 3 is a rear side perspective view of an iron clubhead according to a second preferred embodiment;

25 Fig. 4 is a rear side perspective view of an iron clubhead according to a third preferred embodiment;

Fig. 5 is a rear side perspective view of an iron clubhead according to a fourth preferred embodiment;

Fig. 6 is a rear side perspective view of an iron clubhead according to a fifth preferred embodiment;

30 Fig. 7 is a rear side perspective view of an iron clubhead according to a sixth preferred embodiment; and

Fig. 8 is a rear side perspective view of an iron clubhead according to a seventh preferred embodiment.

35 Figs. 1 and 2 show an iron clubhead according to the first embodiment of the present invention. As shown, it comprises a clubface part A having a given shape and a predetermined loft angle and a rear part B integrally connected to the clubface

part A. The clubface part A and rear part B are made by sheet metal working such as press molding, and these parts are integrally connected by welding or soldering. The clubface parts of clubheads of same identification number have same shape and loft angle. Each clubhead has a neck 1 integrally connected thereto for attaching to an associated shaft.

As shown in Fig. 2, the rear part B comprises an upper piece 5, a lower piece 3, a distal piece 4 and a proximal piece 6 integrally connected together, leaving a center hollow space 2 enclosed thereby. Particular characteristic points or regions of the clubhead such as the center of gravity or the sweet spot of the clubhead can be selectively determined by changing the widths, thicknesses and other physical dimensions of these pieces.

Clubface parts A may be made so as to have one and same shape and size, and a variety of desired clubheads can be made by integrally connecting rear parts of different shapes. Thus, in designing and developing clubheads it is unnecessary to make an expensive test mold for each new-designed clubhead, and accordingly the cost involved for producing test objects will be reduced.

Fig. 3 shows a clubhead according to the second embodiment of the present invention. Its rear part B comprises lower, distal and proximal pieces 3, 4 and 6 integrally connected together. With this arrangement the center of gravity of the club head is at a relatively low level, thus providing a low center-of-gravity type of clubhead.

Fig. 4 shows a clubhead according to the third embodiment of the present invention. Its rear part B comprises upper, lower, and distal pieces 5, 3 and 4 integrally connected together. With this arrangement the center of gravity of the club head is shifted towards the toe of the clubhead, thus providing a toe-heavy type of clubhead.

Fig. 5 shows a clubhead according to the fourth embodiment of the present invention. Its rear part B comprises upper, lower, and proximal pieces 5, 3 and 6 integrally connected together. With this arrangement the center of gravity of the

club head is shifted towards the heel of the clubhead, thus providing a heel-heavy type of clubhead.

Fig. 6 shows a clubhead according to the fifth embodiment of the present invention. Its rear part B comprises lower and distal pieces 3 and 4 integrally connected together. With this arrangement the center of gravity of the club head is shifted down towards the toe of the clubhead, thus providing a low center-of-gravity and toe-heavy type of clubhead.

Fig. 7 shows a clubhead according to the sixth embodiment of the present invention. Its rear part B comprises lower and proximal pieces 3 and 6 integrally connected together. With this arrangement the center of gravity of the club head is shifted down towards the heel of the clubhead, thus providing a low center-of-gravity and heel-heavy type of clubhead.

Finally Fig. 8 shows a clubhead according to the seventh embodiment of the present invention. Its rear part B comprises lower and rising pieces 3 and 7 integrally connected together. The rising piece 7 is positioned at a given place other than either end of the lower piece 3. The center of gravity of the clubhead can be selectively located by putting the rising piece 7 at the center of the lower piece 3 or by shifting the rising piece 7 toward the toe or heel of the lower piece 3.

As may be understood from the above, a variety of iron clubheads of same identification number can be made simply by combining clubface parts having same shape and size and same loft angle, and rear parts of different shapes, thus necessitating no test molds. The center of gravity can be selectively located simply by changing rear parts in a new-designed iron clubhead, and the sweet spot can be enlarged by changing rear parts. As a matter of fact a variety of iron clubheads can be actually made simply by changing rear parts only, thus substantially reducing the cost involved for developing clubheads.

Claims:

1. An iron clubhead comprising a clubface part having a given shape and a predetermined loft angle and a rear part integrally  
5 connected to said clubface part.
2. An iron clubhead claimed in claim 1, wherein said rear part comprising upper, lower, distal and proximal pieces integrally connected together, leaving a center hollow space enclosed  
10 thereby.
3. An iron clubhead claimed in claim 1, wherein said rear part comprising lower, distal and proximal pieces integrally connected together.  
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4. An iron clubhead claimed in claim 1, wherein said rear part comprising upper, lower and distal pieces integrally connected together.
- 20 5. An iron clubhead claimed in claim 1, wherein said rear part comprising upper, lower and proximal pieces integrally connected together.
6. An iron clubhead claimed in claim 1, wherein said rear part  
25 comprising lower and distal pieces integrally connected together.
7. An iron clubhead claimed in claim 1, wherein said rear part comprising lower and proximal pieces integrally connected  
30 together.
8. An iron clubhead claimed in claim 1, wherein said rear part comprising lower and rising pieces integrally connected together, said rising piece being positioned at a given place  
35 other than either end of said lower piece.



9. An iron clubhead substantially as described herein with reference to and as illustrated in Figures 1 and 2 of the accompanying drawings.

5 10. An iron clubhead substantially as described herein with reference to and as illustrated in Figure 3 of the accompanying drawings.

10 11. An iron clubhead substantially as described herein with reference to and as illustrated in Figure 4 of the accompanying drawings.

15 12. An iron clubhead substantially as described herein with reference to and as illustrated in Figure 5 of the accompanying drawings.

20 13. An iron clubhead substantially as described herein with reference to and as illustrated in Figure 6 of the accompanying drawings.

14. An iron clubhead substantially as described herein with reference to and as illustrated in Figure 7 of the accompanying drawings.

25 15. An iron clubhead substantially as described herein with reference to and as illustrated in Figure 8 of the accompanying drawings.

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**Patents Act 1977**  
**Examiner's report to the Comptroller under**  
**Section 17 (The Search Report)**

Application number

9200235.1

**Relevant Technical fields**

(i) UK Cl (Edition K ) A6D (D23B)

(ii) Int Cl (Edition 5 ) A63B

**Search Examiner**

B B CASWELL

**Databases (see over)**

(i) UK Patent Office

(ii)

**Date of Search**

10 MARCH 1992

Documents considered relevant following a search in respect of claims

1-15

| Category<br>(see over) | Identity of document and relevant passages                   | Relevant to<br>claim(s) |
|------------------------|--|-------------------------|
| XP                     | GB 2238251 A (TAYLOR) 29 May 1991<br>See whole document      | 1 at<br>least           |
| X                      | US 4645207 (TERAMOTO)<br>See especially column 2 lines 36-52 | 1 at<br>least           |
| X                      | US 4540178 (JOHNSON)<br>See whole document                   | 1 at<br>least           |
| X                      | US 4355808 (JERNIGAN)<br>See whole document                  | 1 at<br>least           |
| X                      | US 4027885 (ROGERS)<br>See whole document                    | 1 at<br>least           |



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